

[Needle Valve with Soft Tip Stem]

Abstract of Disclosure

A needle valve having a soft tip adapted for sealing an annular valve seat of a body port. The soft tip may be defined as two dissimilar circular rod sections of ductile plastic with the larger diameter having a conical taper. The soft tip is pressed into a mating hole in the metal portion of stem up to its annular seat. A thin metal tubular section of the metal stem is cold formed over the soft tip to retain it in place. The metal retainer secures the soft tip in the axial direction and limits the radial expansion of the soft tip while it is cold formed over the annular valve seat of the body port. The metal retainer also limits the axial movement of the stem to its maximum operating position. Under high axial forces, the soft tip does not rotate relative to the valve seat. A resilient high-pressure seal is achieved with this arrangement.